

ISOLATION OF *VIBRIO PARAHAEMOLYTICUS* FROM *MUSCA DOMESTICA VICINA* AND *CHRYSOMYIA MEGACEPHALA* IN CALCUTTA

By

A. K. HATI, NEELAM TANDON, B. D.
CHATTERJEE and P. K. DE

Calcutta School of Tropical Medicine, Calcutta

(With 1 Table)

INTRODUCTION

Sporadic non-seasonal cases of gastroenteritis due to *Vibrio parahaemolyticus* infection occur in Calcutta throughout the year, involving poor socioeconomic group of non-vegetarian and strict vegetarian habits. In an attempt to search the reservoir of this infection, isolates of few fresh non-marine animals were examined and *V. parahaemolyticus* was demonstrated in the following fishes: *Caridina rajadhari* (chingri), *Amblybharigondon mola* (mourolla), *Bardus ticto* (punti), *Glossogobbius guiris* (bele) and *Apocryptes lanceolatus* (goole). Out of 100 samples of pond water around the slum areas in Calcutta, positive isolation of *V. parahaemolyticus* biotype I was detected in 35. However, attempts to isolate *V. parahaemolyticus* biotypes from 50 normal human stools, 258 faecal samples of crow and 250 stools of dog yielded no positive result (Chatterjee, 1974). *V. parahaemolyticus* was also isolated in about 30% marine sample, i.e., Hooghly river water and marine shrimps in Calcutta (Chatterjee *et al.*, 1973).

In the city of Calcutta house flies and other related flies abound. Do they play any role as the reservoir of this bacterium? An attempt was made to isolate *V. parahaemolyticus* biotype I from the whole body washings and viscera of the flies collected from fish stalls and sweet shops of Calcutta.

MATERIALS AND METHODS

Samples of flies were collected once in a week in sterile test tubes, separately from fish markets and sweet shops situated in the heart of Calcutta city. Different fish and sweet shops in the same locality were selected each time.

As soon as the collection was brought to the laboratory, the tubes containing the flies were kept in ice for 20 minutes so as to anaesthetize them for dissection. Five flies each from fish and sweet shop were selected at random for dissection.

Prior to dissection, each fly was dropped in a labelled sterile test tube having 10 ml. of alkaline peptone water containing 3% NaCl (P 9.2), with the help of a sterile forceps. Each tube was then shaken thoroughly, so as to wash the fly externally and kept as such for 10 minutes. Internal viscera of each fly was then dissected on a sterile slide using sterile forceps and needles. Internal organs so dissected were then drained into another labelled tube (label corresponding to its washing) containing 10 ml. of peptone solution.

The washings of individual flies and internal viscera so collected were then bacteriologically investigated for isolation of *V. parahaemolyticus* biotype I according to the method of Chatterjee (1974).

Table 1.—Isolation of *Vibro parahaemolyticus* from *Musca domestica vicina* and *Chrysomyia megacephala*.

Site	<i>Musca domestica vicina</i>						<i>Chrysomyia megacephala</i>					
	Washings			Viscera			Washings			Viscera		
	No.	Positive	%	No.	Positive	%	No.	Positive	%	No.	Positive	%
Fish stalls (10)	44	2	4.54	41	8	19.51	6	—	—	4	2	50
Sweet shops (10)	45	3	6.66	40	10	25.00	5	—	—	5	—	—
TOTAL (20)	89	5	5.61	81	18	22.22	11	—	—	9	2	22.22

RESULTS AND DISCUSSION

From 10 different fish stalls, 44 house flies (*Musca domestica vicina*) and 6 blue bottle flies (*Chrysomyia megacephala*) were captured. Similarly from 10 sweet shops 45 house flies (*M. d. vicina*) and 5 blue bottle flies (*C. megacephala*) were brought to the laboratory (Table 1).

Out of altogether 89 *M. d. vicina*, *V. parahaemolyticus* was isolated from the surface washings of 5 specimens (5.61%) of which 2 (4.54%) were collected from the fish stalls and 3 (16.66%) from the sweet shops.

Out of 81 viscera of *M. d. vicina* examined, *V. parahaemolyticus* was present in 18 (22.22%), 8 (19.51%) from fish stalls and 10 (25%) from sweet shops.

External washings of 11 *C. megacephala* caught from both kinds of shops did not yield any positive result.

Out of 9 viscera of *C. megacephala* studied, *V. parahaemolyticus* was isolated from 2 specimens (22.22%), obtained from fish stalls.

It was observed that the flies of both species were attracted to fish and sweetmeat, but the number of *M. d. vicina* was much greater than that of *C. megacephala* in both types of shops.

Potentially pathogenic *V. parahaemolyticus* biotype I was present in both the species of flies.

From the whole-body washings of the flies the rate of isolation was comparatively low and isolation was only positive in *M.d. vicina*.

Examination of the viscera of those flies revealed interesting results. The rate of isolation of *V. parahaemolyticus* from the viscera (22.22%) was higher than that of the washings (5.61%) in both the species of flies. However from the viscera of *C. megacephala* caught from sweet shops no *V. parahaemolyticus* was isolated upto now.

The results indicate that the organisms get suitable environment in the viscera of the flies to survive.

This study reveals that house flies and other related flies play a role as reservoir of *V. parahaemolyticus* in Calcutta. No other reference has been quoted in the literature to the occurrence of *V. parahaemolyticus* in flies.

The rate of infection of the viscera of both species of flies is alarming, indicating a thorough study of the epidemiology of parahaemolyticus gastroenteritis in Calcutta through the year.

ACKNOWLEDGEMENTS

The authors are grateful to Prof. A. B. Chowdhury, Director, Calcutta School of Tropical Medicine for giving the permission to publish the data. Thanks are due to Dr. A. C. Mukherji, Associate Professor, Bacteriology, for his valuable advice. The assistance of Mr. S. Sur and Mr. Niren Dey is thankfully acknowledged.

SUMMARY

Potentially pathogenic *Vibrio parahaemolyticus* was isolated from *Musca domestica vicina* and *Chrysomya megacephala* flies from the fish stalls and sweet shops in Calcutta.

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